REMARKS

The above-listed claim amendments along with the following remarks are fully responsive to the final Office Action set forth above. This Amendment places the application in condition for allowance, or in better position for appeal, and entry of this Amendment is requested. Claims 3, 4, 27, and 28 are amended. The Examiner's objections to the claims have been addressed by the amendments. No new matter is introduced into the application by the claim amendments.

After entry of this Amendment, claims 1-7, 9, 11-17, and 22-28 are pending. The Examiner has indicated the allowability of claims 13 and 14 if rewritten in independent form.

The Applicants wish to thank Examiner Lee for the telephone interview of August 26, 2003 with Sean B. Mahoney. During the interview, U.S. Patent 6,124,425 to Nguyen was discussed.

One embodiment of the present invention includes a lithographic printing form precursor comprising an anodized aluminum support that has not been subjected to a chemical treatment step after anodization, and an imageable coating comprising a polymeric substance having pendent colorant groups and reversible insolubilizer groups. The imageable coating does not include a free colorant dye. Other embodiments include methods for preparing a printing form precursor, and methods for preparing a printing form.

As described in the Specification, an aluminum support for a lithographic printing form precursor is often anodized to provide a hard surface, and then treated by a post-anodic treatment ("PAT"). Commonly employed post-anodic treatments include treatment using a silicate or phosphate composition (page 1, paragraph [0003]).

If no PAT is performed on the aluminum support, and if a free colorant dye is employed, then the colorant dye may form an absorbed or residual layer on the anodized surface of the support (page 3, paragraph [0005]). The absorbed or residual layer will remain after development of the lithographic printing form, and will reduce visual color contrast between exposed and unexposed areas of the printing form. Id.

In the practice of the present invention, this problem is addressed by utilizing an imagable coating comprising a polymeric substance having pendent colorant groups. The imagable coating may then be used on an aluminum support that has not been subjected to the chemical treatment step of a PAT.

Claim Rejections – 35 U.S.C. § 112

The Examiner rejected claim 3 under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicants regard as their invention. After entry of this Amendment, claim 3 is amended in accordance with the Examiner's construction of the claim. Withdrawal of the rejection is requested.

The Examiner rejected claims 27 and 28 under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicants regard as their invention. After entry of this Amendment, claims 27 and 28 are amended to properly depend from claim 22. Withdrawal of the rejection is requested.

Claim Rejections – 35 U.S.C. § 102

The Examiner has rejected claims 1-6, 9, 11, 12, 17, and 22-28 as anticipated by U.S. Patent 6,124,425 to Nguyen ("Nguyen"). The Examiner asserts that Nguyen teaches all the elements of the claimed invention, and specifically refers to Example 18 given at col. 25, lines 43-50. The Examiner maintains that Example 18 of Nguyen reports an aluminum substrate that is electrolytically grained and treated with polyvinyl phosphoric acid (sic). The Examiner concludes that Nguyen therefore inherently teaches the aluminum support of the present claims which is anodized but not subsequently subjected to a chemical treatment step.

It is respectfully submitted that Example 18 of Nguyen does not provide all the elements of the present claims. As is recited in independent claims 1, 17, and 22, practice of the present invention requires that an anodized aluminum support is anodized but not subsequently subjected to a chemical treatment step before an imagable coating is applied to the anodized aluminum support.

In Example 18 of Nguyen, however, a coating solution was spin-coated onto an electrolytic grained aluminum substrate, which was reported to be treated with polyvinyl phosphoric acid (sic). No mention is made of "anodization" or of the formation of an aluminum oxide layer. Furthermore, no details are given as to electrolyte concentration, current density, anodization time, oxide thickness, or any other parameter that would be relevant to anodization or anodic oxidation.

Substrate preparation processes of electrolytic graining, anodization, and post-anodic treatment are well-known in the art of lithographic printing. Aluminum substrate preparation is discussed in U.S. Patent 5,104,743 to Nishikawa, *et al.*, at col. 6, lines 7-33 for example:

> After removing the smut on the surface, anodized layers are formed. Well known method can be used for the anodization and sulfuric acid as the most useful electrolytic solution. Next to the sulfuric acid, phosphoric acid is also a useful electrolytic solution. Furthermore, a method of using a mixed acid of sulfuric acid and phosphoric acid as disclosed in Japanese Laid-Open Patent Sho 55-28400 is also useful.
>
> For the sulfuric acid method, the treatment is usually conducted by a DC current but AC current may also be used. The concentration of sulfuric acid used is from 5 to 30% and the electrolytic treatment is applied in a temperature range from 20° to 60° C. for 5 to 250 sec to form 1 to 10 g/m^2 of oxide layers on the surface. In the electrolytic solution, aluminum ions are preferably present. Further, the current density is preferably from 1 to 20 A/dm^2. In the case of the phosphoric acid method, treatment is applied at a concentration of 5 to 50%, a temperature of 30° to 60° C., for 10 to 300 sec and at a current density of 1 to 15 A/dm^2.
>
> *After forming the oxide layers* in this way, a post treatment may be applied if necessary. For instance, there may be used a dipping treatment in an aqueous solution of *polyvinyl phosphoric acid* as described, for example, in British Patent No. 1,230,447 or in an aqueous solution of an alkali metal silicate as disclosed in U.S. Pat. No. 3,181,461. (Emphases added).

As is clearly set out in the third paragraph quoted above, a polyvinyl phosphoric acid (sic) treatment is generally performed after an anodization step, and is thus considered a "post treatment" or post-anodic treatment. U.S. Patent 4,153,461 to Berghäuser, *et al.* (which is an

equivalent of British Patent No. 1,230,447 cited in the quoted section above), reports the treatment of an anodically oxidized aluminum surface with an aqueous solution of polyvinyl *phosphonic* acid (col. 2, lines 28-40).

Preparation of an aluminum support for a lithographic printing plate is also discussed extensively in U.S. Patent 6,264,821 to Nishino, *et al.* Anodization and post-anodic treatment for the purposes of hydrophilizing the support in particular are discussed at col. 14, lines 9-42:

> The aluminum plate is anodized to have increased wear resistance on the surface. The electrolyte to be used in anodizing the aluminum plate may be selected from among any substances that are capable of forming porous oxide films. Generally, sulfuric acid, phosphoric acid, oxalic acid, chromic acid or mixtures thereof are used. The concentration of the electrolyte is determined as appropriate for the type of the electrolyte used. The conditions for anodization are variable with the electrolyte to be used and cannot be specified uniquely. Generally, satisfactory results are obtained under the following conditions: electrolyte's concentration, 1 to 80 wt %; its temperature, 5 to 70° C.; current density, 1 to 60 A/dm^2; voltage, 1 to 100 V; and time of electrolysis, 10 to 300 seconds.
>
> Anodization is usually performed with a direct current but an alternating current may of course be impressed. An anodic oxide film is suitably formed in an amount of 1 to 10 g/m^2. If less than 1 g/m^2 of an anodic oxide film is formed, the resulting lithographic printing plate has only a poor printing durability or the non-image area of the plate is prone to be damaged and so-called "flaw stain" (ink adheres to the damaged area) is likely to occur.
>
> *After anodization*, the aluminum surface may optionally be hydrophilized. For the purposes of the present invention, hydrophilization may be performed by an alkali metal silicate (e.g. sodium silicate in aqueous solution) method of the types described in U.S. Pat. Nos. 2,714,066, 3,181,461, 3,260,734 and 3,902,734. In this method, the support is either immersed or electrolyzed in an aqueous solution of sodium silicate. Other methods that can be used are a treatment with potassium fluorozirconate as described in Examined Japanese Patent Publication (kokoku) No. 22063/1988 and a treatment with *polyvinyl phosphoric acid* as described in U.S. Pat. Nos. 3,276,868, 4,153,461 and 4,689,272. (Emphases added).

As is clearly set out in the third paragraph quoted above, a hydrophilizing treatment would generally be performed after an anodization step, and may include treatment by aqueous sodium silicate or treatment with polyvinyl phosphoric acid (sic), for example.

U.S. Patent 3,276,868 to Uhlig, cited in the excerpt above, reports planographic printing plates using aluminum as a support material and including a thin coating of a *phosphonic* acid or derivative thereof (col. 1, lines 14-18), such as polyvinyl *phosphonic* acid (col. 2, line 13). U.S. Patent 4,153,461 to Berghäuser, *et al.* reports the treatment of an anodically oxidized aluminum surface with an aqueous solution of polyvinyl *phosphonic* acid (col. 2, lines 28-40). U.S. Patent 4,689,272 to Simon, *et al.* reports a two-stage hydrophilizing treatment of an aluminum oxide layer that is formed by anodization. In the first post-treatment stage, the aluminum oxide layer is treated with an aqueous alkali metal silicate solution (such as sodium silicate), and in the second post-treatment stage, the aluminum oxide layer is treated with an aqueous solution containing at least one organic polymer comprising vinylphosphonic acid or vinylmethylphosphonic acid monomers, such as polyvinyl *phosphonic* acid.

Substrate preparation is also extensively discussed in U.S. Patent 6,520,088 to Vosseler, at col. 1, lines 30-48, and post-anodic treatments are discussed in U.S. Published Application 2003/0068578 of Van Damme, *et al.* at page 2, paragraph [0013].

As a further example of the use of polyvinyl phosphoric acid or polyvinyl phosphonic acid for the purposes of hydrophilizing a substrate after anodization, reference can be made to U.S. Patent 6,436,601 to Seth, *et al.* In Example 1 (col. 6, lines 4-7), an aluminum substrate for a printing plate was degreased, mechanically grained, anodized, and then made hydrophilic with a treatment of polyvinyl phosphoric acid (sic).

Only one U.S. reference has been located in which polyvinyl phosphoric acid or polyvinyl phosphonic acid was reported to be useful in an anodization step. U.S. Patent 4,578,156 to Platzer reports an electrochemical process for applying a metal oxide-organic complex on a metal surface using a polybasic organic acid plus a base as an electrolyte (abstract). The polybasic organic acid may be a polyphosphonic acid or polyphosphoric acid,

for example. Polyvinyl phosphonic acid is stated to be a preferred electrolyte. The reference reports that the electrolyte should have a pH in the range of about 3 to about 10. The polybasic organic acid therefore is *titrated with a base*, such as sodium hydroxide, to increase the pH; see col. 6 at lines 54-57. In the given Example, an electrolytic solution comprising 1 wt.-% polyvinyl phosphoric acid titrated to pH of about 6.5 is sufficient to realize the advantages conferred by the inventive method, while a 1 wt.-% polyvinyl phosphoric acid electrolyte solution at pH 2 was not; see col. 9 at lines 19-64. Therefore, the presence of a base was indispensable to the reported electrochemical process.

Example 18 of Nguyen is silent about anodization, and reports only a treatment with polyvinyl phosphoric acid (sic). Example 18, in contrast to other references cited above in which anodization is described, does not report any other experimental conditions that would indicate that the polyvinyl phosphoric acid (sic) is used in an anodization step, such as anodizing current density, voltage, anodization time, electrolyte concentration, pH, oxide thickness, or any other parameter that would be relevant to anodization or anodic oxidation. Nor does Example 18 report the use of a base to neutralize the polyvinyl phosphoric acid (sic) to a pH that is suitable for anodization (as reported in U.S. Patent 4,578,156 to Platzer).

The reference is therefore deficient and cannot meet the recitation in the present claims 1, 17, and 22; i.e., that the anodized aluminum support is anodized but not subsequently subjected to a chemical treatment step.

Even assuming, *arguendo*, that the substrate in Example 18 from Nguyen had been anodized, then the reported treatment still does not provide a feature recited in the present independent claims. The treatment with polyvinyl phosphoric acid (sic) reported in Nguyen is a chemical treatment step that is well-recognized in the art to be a "post treatment" or post-anodic treatment for the purpose of hydrophilizing the substrate, as demonstrated by the references cited above. Again, the reference would be deficient and cannot meet the recitation in the present claims 1, 17, and 22; i.e., that the anodized aluminum support is anodized but not subsequently subjected to a chemical treatment step.

Therefore, the Nguyen reference cannot anticipate the present invention. Nor does Nguyen contain a teaching or suggestion to use an aluminum support that is anodized but not subsequently subjected to a chemical treatment step. Withdrawal of the rejection is requested.

Claim Rejections – 35 U.S.C. § 103

The Examiner has rejected claims 7, 15, and 16 as unpatentable over Nguyen in view of U.S. Patent 6,074,797 to Suezawa, *et al.* ("Suezawa"), with U.S. Patent 6,447,895 to Kamir, *et al.* and U.S. Patent 6,170,292 to Boulos, *et al.* cited in support. The Examiner states that Nguyen teaches all the limitations of claims 7, 15, and 16, except for the inclusion of a pigment or an infrared-absorbing compound.

As discussed above, Nguyen cannot anticipate the claims from which claims 7, 15, and 16 depend. Furthermore, the combination of Nguyen and Suezawa does not teach or suggest using an anodized aluminum support that has been anodized but not subsequently subjected to a chemical treatment step. The present invention permits the manufacture of a lithographic printing form precursor without a post-anodic chemical treatment step. A printing form precursor can therefore be manufactured more efficiently, and with reduced usage of consumable resources. The references cited by the Examiner do not provide these advantages. Therefore, the combination of references cited by the Examiner cannot render the claimed invention obvious. Withdrawal of the rejection is respectfully requested.

Conclusion

This Amendment places the application in condition for allowance, or in better condition for appeal, and entry of this Amendment and reconsideration of the application is requested. All claims are in condition for allowance, and a notice to that effect is respectfully solicited.

If the Examiner would like copies of any of the above-cited references, the Applicant would be glad to provide copies upon request. Furthermore, if there are any outstanding

issues remaining in this case after consideration of this Amendment, the Examiner is invited to call the undersigned attorney in order to expedite further prosecution.

Respectfully Submitted,

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